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## COMPUTER SCIENCE 3753

### Assignment #3

**Points:** 40

**Weight:** 2%

**Due:** Friday, Sept. 28, 2018 at 11:55 pm in BlackBoard

**Note:** Late assignment will not be accepted without instructor's pre-approval.

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Hand in a zipfile **yourNmae-hmwk03.zip** that contains one Jupyter notebook with appropriate code cell and markdown (comment) cells, python scripts, and data files that are needed to solve the following questions.

For each of following questions, the Jupyter notebook should contain one or more code cell that either directly solves the question or runs a python script file to solve the question. You need to demonstrate your solutions with several test examples.

***This homework must be completed individually.***

1. [20] Here's a couple of exercises for you to practice your NumPy and Python skills. First, make the following two arrays:

```
happy = np.array([[1,1,1, 2],[2,2,2,3],[3,3,3,4],[4,4,4,5]])
sad = np.array([[1,3],[2,4],[5,7],[6,8],[99,100]])
```

- (a) Use slice notation to print the 2nd column from the 1st row in happy.
  - (b) Can you add happy and sad together? Why or why not?
  - (c) Add 5 to each element in sad.
  - (d) Subtract 1 from the last element in the last row of happy.
  - (e) Make a new array using slice notation that looks like happy but does not include the first column and the last row.
2. [20] Write a function checkaverage that takes a NumPy array and an argument and returns a new array with the same dimensions in which every element in the input array will stay the same if it is no less than the average of the whole array and will be set to zero, otherwise.

```
checkaverage(np.array([[9, 2, 3], [4, 5, 6]]))
Out[:]: array([[9, 0, 0], [0, 5, 6]])
```